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December 9, 1852.

COLONEL SABINE, R.A., Treas. V.P., in the Chair.

The Chairman announced that the President had appointed the following noblemen and gentlemen Vice-Presidents for the ensuing year:—

The Earl of Enniskillen.
Lord Wrottesley.
Col. Sabine, R.A.

Mr. Gassiot.
Mr. Hopkins.
Dr. Wallich.

Mr. Ward and Dr. Waller were admitted into the Society.

The following papers were read.

1. "An Experimental Inquiry undertaken with the view of ascertaining whether any signs of Current Electricity are manifested in Plants during vegetation." By H. F. Baxter, Esq. Communicated by Thomas Bell, Esq., Sec. R.S. &c. Received August 9, 1852.

In the present communication the author has related the experimental results that he has arrived at, and which tend to show that electric currents exist in the leaves and in the roots or spongioles of plants. Becquerel and Wartmann have already proved that electric currents may be obtained in different parts of vegetables, but the object of the paper is to point out the connection of the currents in the above-named organs with the vital or organic changes which take place in them.

In consequence of the secondary actions which occur at the electrodes some difficulty is experienced in ascertaining the true or normal result in the roots. Combining however the facts obtained by means of the galvanometer with analogical evidence, the author considers that they tend to establish the conclusion, that, during the changes which occur in the leaves and in the roots of plants, current electricity is manifested.

2. "On the relation of Cardioids to Ellipses." By Joseph Jopling, Esq. Communicated by S. H. Christie, Esq., Sec. R.S. Received Oct. 29, 1852.

The object of this communication is to point out the relation of cardioids to ellipses, and that the former as well as the latter are related to and deducible from the cone.

The author remarks that the motions of the common trammel show most beautifully the mechanical relation of ellipses and cardioids, and that they are thus reciprocals of each other; that an ellipse, as is well known, is a *plane section*, or a projection of a plane section of a cone upon any other plane, the limits being the circle and the right line; and a cardioid is also a projection from a cone; the difference being that the cardioid is obtained from a curved section, formed by the intersection of a sphere or other curved solid with a cone.

After referring to properties of the sections of cones by spheres, depending on the magnitude of the vertical angles of the cone, the author states that these and many other new curves, their relations,

and new properties of the cone and the sphere are made most clearly manifest, and numerous practical results are very readily obtained by the application of a double scale of sines to the rays of the cone—distributed equally on the plan—correspondingly on the elevation, and on the developed surface, or on any other projection of the cone.

He considers that it is of great importance that some method should be devised to give appropriate names to these new curves, especially those so evidently and intimately related to old ones. Thus the curved intersection of a cone and a sphere, from which the cardioid is projected on the base, and which has then the cusp turned symmetrically inwards, by another projection on a vertical plane gives a symmetrical line with the cusp turned outwards, having other distinct points of change in the curvature.

As ellipses are related to cardioids, so it is stated are hyperbolas in a similar way related to conchoids; conchoids to their mechanical reciprocals; and parabolas to cissoids; amongst the vast number of curves, any of which can conveniently be derived by scales practically from the cone.

By this method it is considered that not only projections of curved sections of cones, spheres, &c. are obtained with ease, but also by means of scales, ruled papers, hollow cones and diagrams, the plane sections of cones, and all projections from them are greatly facilitated.

In conclusion the author remarks, that if this subject can be entertained by the Royal Society, he will make copies of a series of diagrams to illustrate what he has here stated in reference to scales applied to cones to obtain cardioids, &c.

December 16, 1852.

J. P. GASSIOT, Esq., V.P., in the Chair.

A paper was read, entitled "On the Solution of Urinary Calculi in dilute Saline Fluids, at the temperature of the body, by the aid of Electricity." By H. Bence Jones, M.D., F.R.S., Physician to St. George's Hospital. Received Oct. 12, 1852.

In 1848 the author first attempted to dissolve calculi in a solution of nitrate of potash, by placing them at the same time between the electrodes of a galvanic battery; an effect was produced on the uric acid at the negative pole, but no very decided result was obtained. The experiments were resumed during the last summer.

The results with uric acid calculi may be thus arranged. The action was chiefly at the negative electrode.

Experi- ments.	Duration of experiment. h m	Strength and temperature of solution.	Power of Battery.	Result. grs.
1.	4	Saturated solution of nitre	212 ... 10 ...	0½ dissolved.
2.	6 5	¾ nitre, ¾ water	109 ... 5 ...	11
3.	6 10	" "	101 ... 10 ...	14
4.	6 20	" "	100 ... 10 ...	16
5.	6 45	" "	106 ... 10 ...	12
6.	3 17	" "	98 ... 20 pair	27½